



## INVESTIGATOR'S ANNUAL REPORT

United States Department of the Interior  
National Park Service

All or some of the information you provide may become available to the public.

OMB # (1024-0236)  
Exp. Date (11/30/2010)  
Form No. (10-226)

<b>Reporting Year:</b> 2008	<b>Park:</b> Shenandoah NP	<b>Select the type of permit this report addresses:</b> Scientific Study	
<b>Name of principal investigator or responsible official:</b> Larissa Bailey		<b>Office Phone:</b> 301-497-5637	
<b>Mailing address:</b> Northeast Amphibian Research & Monitoring Initiative  USGS - Patuxent Wildlife Research Center  12100 Beech Forest Road Laurel, MD 20708 US		<b>Office FAX</b>  <b>Office Email</b> lbailey@usgs.gov	
<b>Additional investigators or key field assistants (first name, last name, office phone, office email)</b>			
<b>Name:</b> Jennifer Sevin		<b>Phone:</b> 202-633-4792	
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<b>Project Title (maximum 300 characters):</b> DOI-USGS AMPHIBIAN RESEARCH AND MONITORING INITIATIVE (ARMI) IN THE NORTHEAST			
<b>Park-assigned Study or Activity #:</b> SHEN-00259	<b>Park-assigned Permit #:</b> SHEN-2008-SCI-0011	<b>Permit Start Date:</b> Apr 29, 2008	<b>Permit Expiration Date:</b> Dec 31, 2009
<b>Scientific Study Starting Date:</b> Apr 29, 2008		<b>Estimated Scientific Study Ending Date:</b> Dec 31, 2009	
<b>For either a Scientific Study or a Science Education Activity, the status is:</b>  Continuing		<b>For a Scientific Study that is completed, please check each of the following that applies:</b>  <input type="checkbox"/> A final report has been provided to the park or will be provided to the park within the next two years  <input type="checkbox"/> Copies of field notes, data files, photos, or other study records, as agreed, have been provided to the park  <input type="checkbox"/> All collected and retained specimens have been cataloged into the NPS catalog system and NPS has processed loan agreements as needed	
<b>Activity Type:</b> Research			
<b>Subject/Discipline:</b> Herpetology (Amphibians / Reptiles)			

### Purpose of Scientific Study or Science Education Activity during the reporting year (maximum 4000 characters):

SNP is one of the Apex Sites for the DOI-USGS Amphibian and Research Monitoring Initiative (ARMI) in the Northeast Region. The goals of this long-term amphibian monitoring project at SNP are to:

1. Monitor streamside and terrestrial amphibians

2. Evaluate common amphibian survey methodologies
3. Assess spatial and temporal variation in amphibian occurrence in relation to environmental variables
4. Assess health and disease status of amphibians at SNP
5. Conduct population demographic studies on a suite of streamside salamander species
6. Conduct population monitoring and conservation genetics work on the federally endangered Shenandoah Salamander (*Plethodon shenandoah*)

**Findings and status of Scientific Study or accomplishments of Science Education Activity during the reporting year (maximum 4000 characters):**

Efforts for the 2008 focused on *P. shenandoah* and stream salamander sampling (subject of another permit, Evan Grant PI). For *P. shenandoah*, 2008 represented a focused large-scale study to determine factors influencing the current distribution of *P. shenandoah* among 3 mountains: Hawksbill, Stony Man and Pinnacles. Sample locations were chosen via a stratified random sampling approach, with 3 strata representing areas where *P. shenandoah* were previously documented (precisely known), suitable talus habitat that had no previous known occurrence, and adjacent non-optimal habitat. Suitable habitat for *P. shenandoah* is believed to be sites where there is talus habitat, elevations above 900 m and slopes with a Northerly aspect (see Recovery Plan and Jaeger papers). Based on our 2007 pilot data, we determined that 32 m x 2 m transects yielded good detection probabilities for *P. shenandoah* given the species occupied the transect (e.g. detection probabilities in the spring were >0.70 on 32 m x 2 m transects).

124 sites were surveyed 2-3 times during the spring, summer, and fall seasons under varying conditions including both wet and dry conditions. Using the spring 2008 raw data only, among the 45 sites located in historical habitat, *P. shenandoah* individuals were found at 14 sites (31%).

Among the 38 sites located in suitable habitat with unknown historical occurrence, *P. shenandoah* individuals were only found at a single site. The remaining 41 sites were located in surrounding by a less suitable habitat: *P. shenandoah* individuals were found at one of these sites as well. The first documented nest of *P. shenandoah* was discovered on Stony Man mountain in early August. It was located at a site that had been sampled in both 2007 and 2008. The eggs were found hanging under the root mass where the rock had been partially under the soil (the nest was between the soil and rock). There were six eggs (~5mm) and two hatchlings and the mother was present guarding the nest. The mother (SVL 47 mm) had the characteristic dorsal stripe and most of the salamanders in the eggs were also striped.

**For Scientific Studies (not Science Education Activities), were any specimens collected and removed from the park but not destroyed during analysis?**

No

**Funding specifically used in this park this reporting year that was provided by NPS (enter dollar amount):**  
\$19000

**Funding specifically used in this park this reporting year that was provided by all other sources (enter dollar amount):**  
\$5000

**List any other U.S. Government Agencies supporting this study or activity and the funding each provided this reporting year:**

**Paperwork Reduction Act Statement:** A federal agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. Public reporting for this collection of information is estimated to average 1.625 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the forms. Direct comments regarding this burden estimate or any aspect of this form to Dr. John G. Dennis, Natural Resources (3127 MIB), National Park Service, 1849 C Street, N.W., Washington, DC 20240.